

Docket No.: 60154.302001

Patent

REMARKS

The Examiner is thanked for the comments in the Action. They have helped us considerably in understanding the Action and in drafting this Response thereto. It is our understanding that claims 1-20 remain pending in the application.

Item 1 (Drawings):

The Action states *"The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a detector and a receiver including photo diodes of claim 9 must be shown or the feature(s) canceled from the claim(s)."* Respectfully, this is error.

Claim 9 states nothing about a "detector," and while it does recite "receivers" (one per channel, per parent claim 1), FIG. 4 clearly shows a "photo diode" being used as the "sensor 132" in the receiver depicted there.

Item 2 (§ 112 rejection of claim 9):

The Action states:

Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations of both a detector and said receivers include photo diodes has not been disclosed in the specification.

Respectfully, this is error.

Claim 9 states nothing about a "detector," although photo diode based detectors may be used. Claim 9 does recite "receivers," and these are discussed extensively in the specification (see e.g., pg. 8, ln. 28 through pg. 9, ln. 10, describing FIG. 6; pg. 14, ln. 21 through pg. 15, ln. 1, describing FIG. 10; and pg. 17, ln. 26 through pg. 18, ln. 1, noting that photo diodes are "relatively common and available electro-optical components").

Item 3 (§ 102(e) rejections of claims 1, 3, 5 and 11-20 over Osanai):

Claims 1, 3, 5 and 11-20 are rejected as being anticipated by Osanai. Respectfully this is error.

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The Action states:

Re clms 1,3,5,11,12,13,14,17-20: Osanai discloses a measuring apparatus and method, comprising: using a light source for producing light beams (31); and two optical channels (31 to 33a and 31 to 33c) each including: using an interferometer comprising a reflective target (32a); a beam splitter (33a, 33c); a detector (34a, 34c); and using a receiver (Col 5 line 24).

However, there are a number of parts count discrepancies from which it follows that Osanai does not teach or reasonably suggest an apparatus or method reading on Applicant's claimed invention. From FIG. 3 and col. 5, ln. 1-19 of Osanai it can be appreciated that this reference teaches the use of three interferometers (33a, 33b, and 33c). In the present invention a "reflective target" is present in each of the two channels, yet Osanai teaches that its interferometers (33a, 33c) both employ a single reflection mirror (32a).

As quoted above, the Action here states "a beam splitter (33a, 33c)," yet Osanai clearly states that its elements 33a and 33c are "interferometers" (e.g., col. 4, ln. 59; col. 5, ln. 4-5 and 11) and it can be seen from FIG. 3 of Osanai that these elements 33a and 33c are not splitting light beams in any manner.

The Action confusingly states that "a detector (34a, 34c)" is present in each interferometer and that each is "using a receiver (Col 5 line 24)" when nothing relevant to detectors, receivers, or sensors is discussed at col. 5, ln. 24 of Osanai. Osanai merely teaches the use of "receivers" (34a, 34b, 34c) with each of its interferometers (33a, 33b, and 33c). In any case, our point here is that all of this cannot be reconciled with the present invention, where both a detector and a receiver are provided to work with an interferometer in each channel (and then used according to differing principles of operation than Osanai). Granted, Osanai elsewhere uses variants of the word "detect," e.g., 'focus detecting means/system' (col. 4, ln 59-67; and col. 5, ln. 30) and "acceleration detecting means" (col. 7, ln. 64), but these are clearly not analogous or even relevant to the detectors and receivers in the claimed invention.

The Action continues "Re clms 10,15,16: position data for external system (Col 5 line 24)." However, we urge that these claims are distinguished over Osanai for the same reasons as their parent claims 1 and 12, discussed above.

Item 4 (§ 103(a) rejections, 1/2):

Claims 2, 6, 7, and 9 are rejected as being unpatentable (obvious) over Osanai in view of Hercher. Respectfully this is error.

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The Action here states "*Re clm 2: Osanai discloses the claimed invention as noted above including a laser light source (Osanai 31).*" However, as we have remarked on above, this is incorrect. Accordingly, to the extent that Osanai is relied upon to support rejection of the present claims based on a combination of Osanai and Hercher, a prima facie case for obviousness has not been made (and cannot be made here). Nonetheless, we remark as follows to clarify other apparent points of misunderstanding.

The Action continues "*Hercher discloses that a laser light source in an interferometer should be a diode laser because it is insensitive to reflectivity (Hercher Col 8 lines 11-12).*" Respectfully, Hercher makes no such statement at the cited location, and it follows that the conclusion stated in the Action, that "*it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a diode laser as the laser source in the apparatus of Osanai because it would increase insensitivity to reflectivity as suggested by Hercher*" is simply unsupported conjecture.

The Action further continues "*Re clm 7: position sensitive quad-cell detectors (Hercher 61).*" However, we find no indication anywhere in Hercher that its element 61 is a position sensitive quad-cell detector. That element is an "*interferometer output signal detector*" (col. 7, ln. 56, 58; col. 8, ln. 3, 5), its Fig. 5 shows it shaped in a manner that cannot be reconciled with it being a quad-cell detector, and it is there shown being used for a purpose (classic interferometric measurement of displacement) where the use of a quad-cell detector would be pointless and probably even detrimental. Hercher elsewhere discusses that "*a photodetector can be a bi-cell detector, a quad-cell detector, a CCD array or other*" (e.g., col. 7, ln. 12-13), but this photodetector is that of portions of its invention depicted in its FIG. 1-3 (having nothing to do with interferometry) and that is being used in a manner and for purposes that are irrelevant to the present claimed invention.

The Action yet further continues "*Re clm 9: photo diodes (Hercher Col 7 lines 11-12).*" However, this is also for a part of Hercher having nothing to do with interferometry, and thus irrelevant to the present claimed invention.

Item 5 (§ 103(a) rejections, 2/2):

Claim 4 is rejected as being unpatentable (obvious) over Osanai in view of Maris. Respectfully this is error.

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The Action here states "*Re clm 4: Osanai discloses the claimed invention as noted above including a single laser light source (Osanai 31).*" However, as we have remarked on above, this is incorrect. Accordingly, to the extent that Osanai is relied upon to support rejection of the present claims based on a combination of Osanai and Maris, a prima facie case for obviousness has not been made (and cannot be made here). Nonetheless, we remark as follows to clarify other apparent points of misunderstanding.

The Action continues "*Maris et al teaches that a single light source (Maris et al Fig 1b) can be replaced by two light sources (Maris et al Fig 1c) because it increases contrast.*" First, the two light sources of Maris in its FIG. 1c are used within a single channel and thus cannot read on Applicant's claim 4, wherein there are "*light producing units, one per each said optical channel.*" Furthermore, Maris is art that is irrelevant with respect to the present claimed invention. It addresses totally different problems and it uses totally different principles of operation. For example, it uses pulsed beams, which would be pointless and in many cases detrimental in the present invention. The present invention has no need to "*increase contrast*" (even presuming that this is why Maris teaches multiple light sources, which is a conclusion that the Action leaves unsupported).

Item 6 (Conclusion):

This appears informational in nature and is understood to require no reply.

CONCLUSION

Applicant has endeavored to put this case into complete condition for allowance. It is thought that the objections, the §112 rejection, the §102 rejections, and the §103 rejections have been completely rebutted. Applicant therefore asks that all objections and rejections now be withdrawn and that allowance of all claims presently in the case be granted.

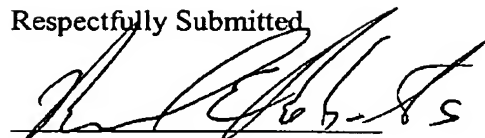
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Respectfully Submitted



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